The Amorium Project: Excavation and Research in 2001

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Introduction

The 2001 season, which lasted for six weeks from 24 July through 4 September, saw an upturn in the fortunes of the Amorium Project. Better funding and a larger team enabled us to carry out a more extensive program of work and so produce more results than circumstances had allowed in previous years.[1] The first four weeks were devoted to an intensive excavation campaign focused on the Lower City Enclosure area in accordance with the five-year plan initiated in 1998.[2] At the same time geophysical survey work, conducted by a team led by Dr. Ali Kaya of the Süleyman Demirel University, İsparta, was carried out on the Upper City mound in the area of the visible remains of an apsidal building, presumed to be a church. Sabri Aydal of the Antalya Archaeological Museum returned to complete his survey of the site, and his topographical plan extends over an area of 250 hectares, encompassing not only the intramural settlement but also the necropolis to the south and west of the city (Fig. A).

Site enhancement and conservation work continued throughout the season, although more emphasis was given to this essential work during the last two weeks. With the generous

[1] For a brief preliminary report on the season, see C. S. Lightfoot, "Amorium 2001," in G. Coulthard, ed., *Anatolian Archaeology. Research Reports 2001. British Institute of Archaeology at Ankara* 7 (2001): 9–10. See also C. S. Lightfoot and Y. Mergen, "Amorium Kazısı 2000," *23. Kazı Sonuçları Toplantısı. 28 Mayıs-01 Haziran 2001, Ankara,* vol. 2 (Ankara, 2002), 243–56.

[2] The team comprised twenty-four archaeologists, conservators, and students, of whom eleven were Turkish, three British, three German, two American, two Israeli, one Greek, one Indian, and one Russian. Their names are Yalçın Mergen (archaeologist, University of Anatolia, Eskişehir), Yoav Arbel (archaeologist, University of California, San Diego), Sabri Aydal (archaeologist, Antalya Archaeological Museum), Asst. Prof. Dr. Ali Kaya (geophysicist, Süleyman Demirel University), Tuğrul Çakar (photographer), Mücahide Lightfoot (art historian, New York), Dr. Johanna Witte-Orr (fresco specialist, Farmington, Iowa), Dr. Beate Böhlendorf-Arslan (Byzantine ceramics specialist, 18 March University, Çanakkale), Petra Linscheid (textiles specialist, Berlin Freie University), Julie A. Roberts (anthropologist, Glasgow University), Simon Young (archaeologist, University of London), Ekaterina Churakova (conservator, Moscow), Georgios Brokalakis (archaeology graduate student, Rethymno University, Crete), Ivgenia Grigoriev (archaeologist/conservator, Aix-Marseille II University, France), Staci Magill (anthropology graduate student, University of California, San Diego), Mini Sharma (anthropology graduate student, Florida State University), Lander Dunbar (art history student, New York), Seçkin Evcim (archaeology graduate student, University of Anatolia, Eskişehir), Tuğçe Şen (archaeology student, Istanbul University), Hüseyin Yaman and Oğuz Koçyiğit (archaeology students, 18 March University, Çanakkale), and Özgür Cem Selvi and Çığır Ercan (archaeology students, University of Anatolia, Eskişehir). Visitors to the excavations included the mayor of Emirdağ, Sayın İsmet Güler, Prof. Dr. Michael Crawford, Prof. Joyce Reynolds and three other members of the Aphrodisias team, Prof. Dr. Peter Kuniholm and the Cornell University dendrochronology team, the headmaster of the Bolvadin High School, Sayın Muharrem Bayar, Asst. Prof. Dr. Ayşe Çalık-Ross, Prof. Dr. Thomas Drew-Bear, Asst. Prof. Dr. Aysel Şeren, and Sayın Can Yardımcı.

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Thanks also go to the many friends and supporters of the Amorium Project; they include Dr. Neil Christie (Uni-

help of the Emirdağ Municipality we were able to remove all of the spoil heaps created this year, and we also completed the removal of the spoil heaps on the Upper City mound that were left from the excavation of Trenches TT and UU in 1994–96. A new mesh fence was erected at the western end of the Lower City Church, making for a more attractive and welcoming aspect for visitors. In addition, an intensive campaign of wall-capping was carried out on several of the excavated structures, including the Lower City Church. This year we experimented with a combination of brick fragments and earth to see if this would help preserve exposed masonry from further deterioration over the coming winter. It was also decided to invest in a metal-framed roof construction to protect a substantial part of the newly excavated buildings in the Enclosure. Two separate areas in Trench XC were thus covered with removable shelters, designed to be as effective but at the same time as unobtrusive as possible.

At the Dig House progress was made on several fronts. Additions and improvements were made to the facilities in the kitchen and washrooms, and the bottom of the garden was laid out for use as a new roofed study and equipment storage area. The pottery and animal bone depot, constructed under Prof. R. M. Harrison's direction in 1991, was completely emptied so that new metal-framed shelving could be accommodated against the side and back walls before the crates of finds were replaced in a more compact and orderly manner.[3]

The following reports highlight some of the more significant results from the 2001 season, and, as is the nature of such reports, the findings should be regarded as merely a preliminary summary of "work in progress." Much of the detailed recording from the excavations has been excluded for the sake of brevity and clarity; all of this material, accompanied by trench plans, section drawings, and illustrations, will be included in the publication of the Final Report devoted to the Enclosure and the present five-year plan. As a consequence, the work supervised and carried out by Yalçın Mergen, Simon Young, and Mücahide Lightfoot in Trenches XA, XC, and XE respectively has been omitted here, together with other findings made by Yoav Arbel and his team in and around Structure 1. Instead, the excavation report concentrates on the discovery of the bathhouse within Structure 1, and aims to provide a concise description of the layout and physical appearance of the building, whose continued use into the Dark Ages should signal its importance for Byzantine urban archaeology.

The Lower City Enclosure, Trench XC (by Y. Arbel and C. S. Lightfoot)

The 2001 excavations in Trench XC concentrated on a wider exposure of the large rectangular building, Structure 1, first discovered in 1998.[4] Research aims included the determination of the structure's size and configuration, as well as the date of its construction and its function. In the course of the work, part of a large polygonal hall was exposed to the north of Structure 1 (Fig. B). The room proved to be architecturally integral to Structure 1, and stratigraphic analysis based on ceramic and numismatic finds indicated that the whole complex was built in the early Byzantine period, confirming conclusions drawn from the work in 1998.[5] Likewise, the discovery of hypocausts in two of the rooms within Structure 1 secured its identification as a bathhouse.[6] The history of the two parts of the complex, however, appears to have differed significantly. The polygonal hall was totally abandoned at an early stage, whereas finds clearly indicated that Structure 1 continued in use as a bath through the Dark Ages. Even after the bathhouse had been abandoned, the rectangular shell of Structure 1 was converted into a series of short-lived

versity of Leicester), Dr. Stanley Ireland (University of Warwick), Prof. Thomas Drew-Bear (CNRS, France), Dr. Marlia Mango (University of Oxford), Prof. Stephen Mitchell (Exeter University), and Dr. Carlos A. Picón, Lisa Pilosi, and Mark T. Wypyski (The Metropolitan Museum of Art, New York). The 2001 season would not have been so successful without the generous help of Filiz Avan (Government Representative, General Directorate of Monuments and Museums, Ankara), Sayın Seracettin Şahin and the staff of the Afyon Museum, Gina Coulthard and Gülgün Kazan (British Institute of Archaeology at Ankara), Semih Kirişçioğlu (Seza Teknik, Ankara), Hakan and Fahrettin Öklü (Euro Class Car Rental, Ankara), Mehmet Söylemez (Directorate of Monuments and Museums, Ankara), and Zülfünar Yavuzkan (Turkish Consulate, Washington, D.C.). Finally, it is fitting to express our gratitude to Bishop John of Amorion, whose support and enthusiasm have been an inspiration to us throughout the year.

[3] More shelving was also added to the second, larger stone depot.

[4] *DOP* 55 (2001): 381–94.

[5] *DOP* 55 (2001): 383.

[6] *DOP* 55 (2001): 384.

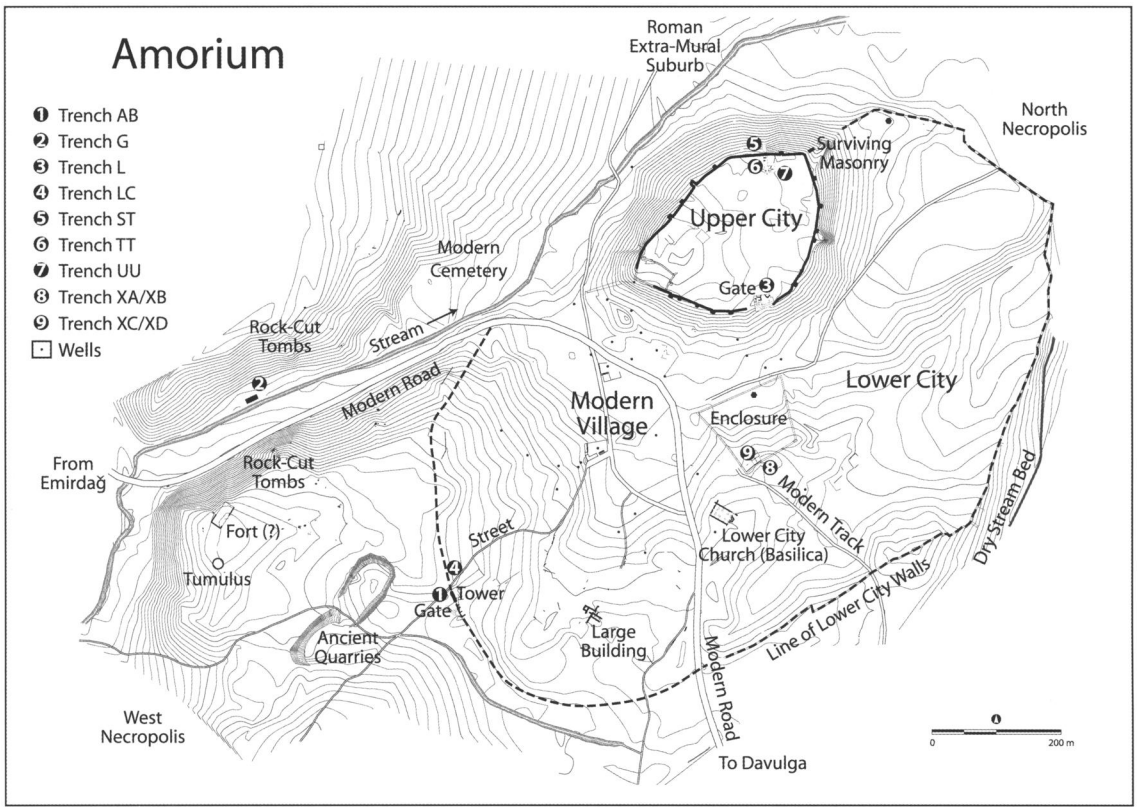


Fig. A Topographical plan of Amorium, 2001 (by S. Aydal)

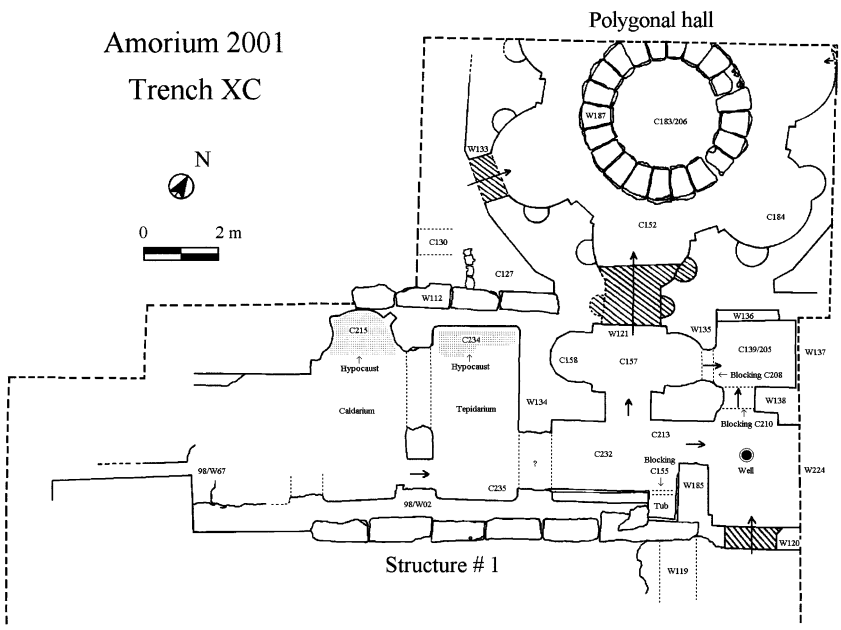


Fig. B Sketch plan of Trench XC, indicating features and contexts in the bathhouse complex (by Y. Mergen)

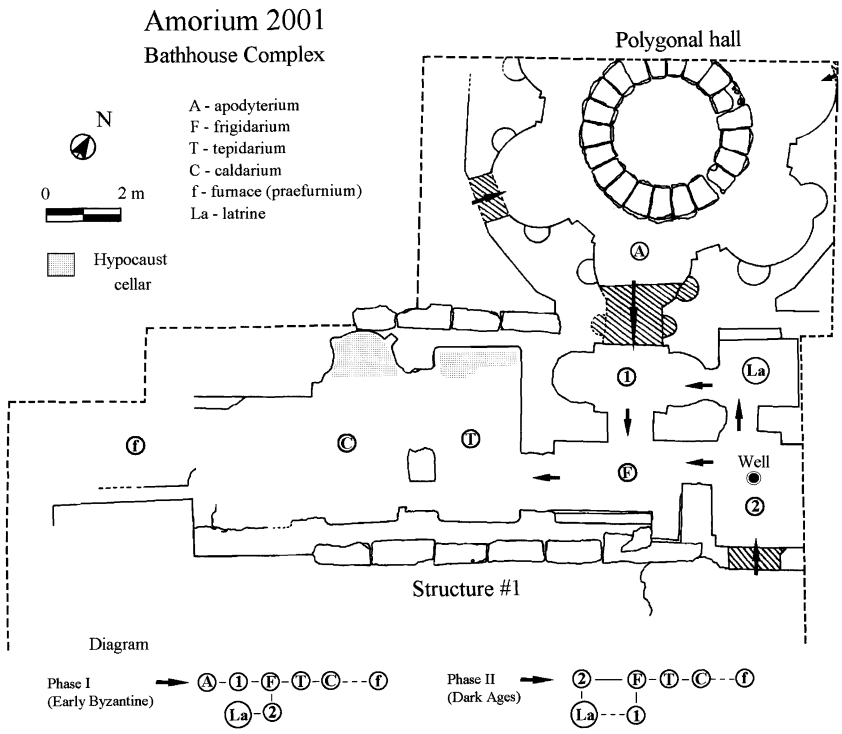
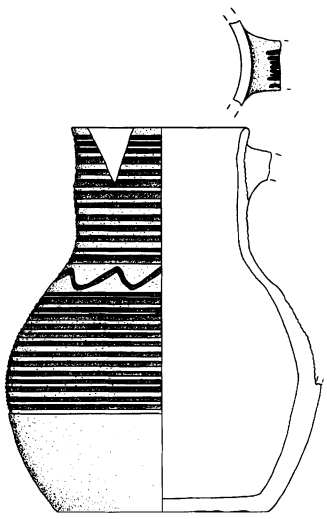


Fig. C Schematic plan and diagram of the Byzantine bathhouse complex, phases I and II (by M. Lightfoot, after Y. Mergen)



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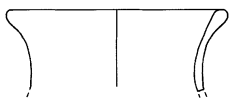

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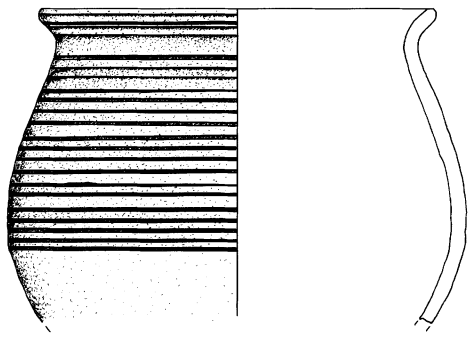

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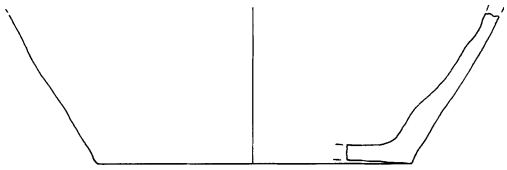

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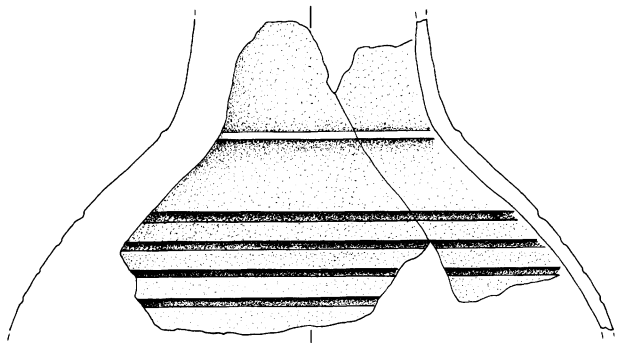
Fig. D Pottery from Trench XC, Structure 1, Context 145. 1: jug of Ware 1; 2–5: jug and cooking pots of Ware 2: Scale 1:3 (by B. Böhlendorf-Arslan)



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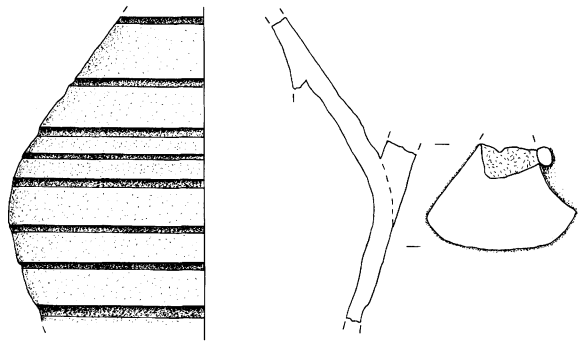

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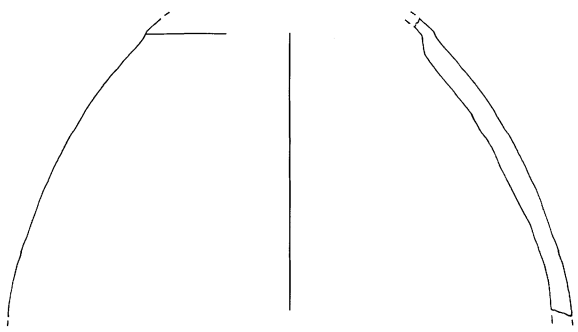

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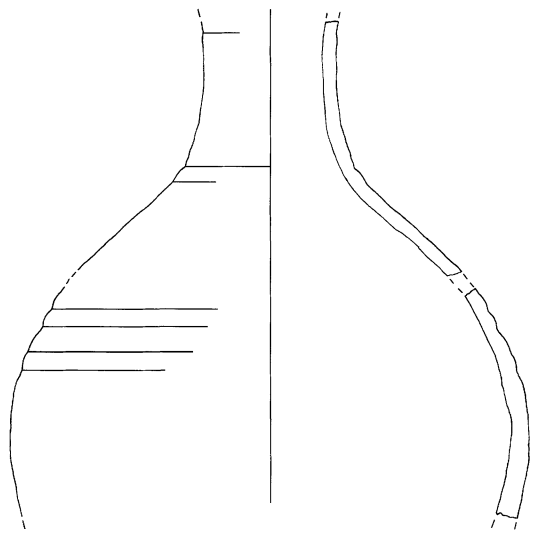

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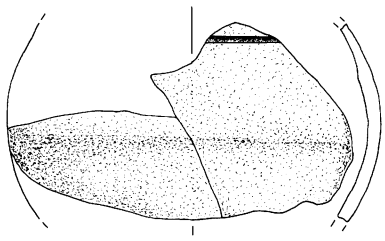
Fig. E Pottery from Trench XC, Structure 1, Context 145. 6–13: vessels of Ware 3: Scale 1:3 (by B. Böhlendorf-Arslan)



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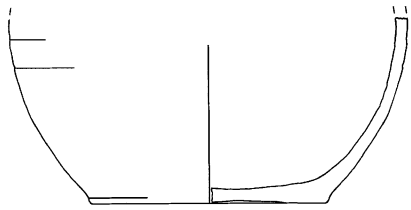

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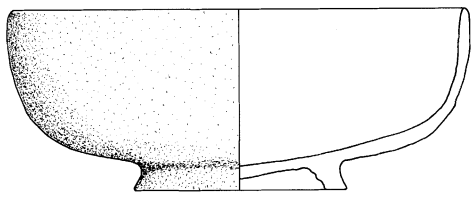

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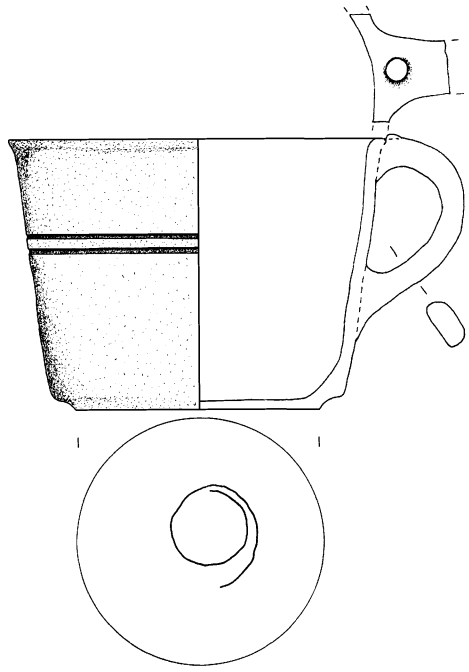

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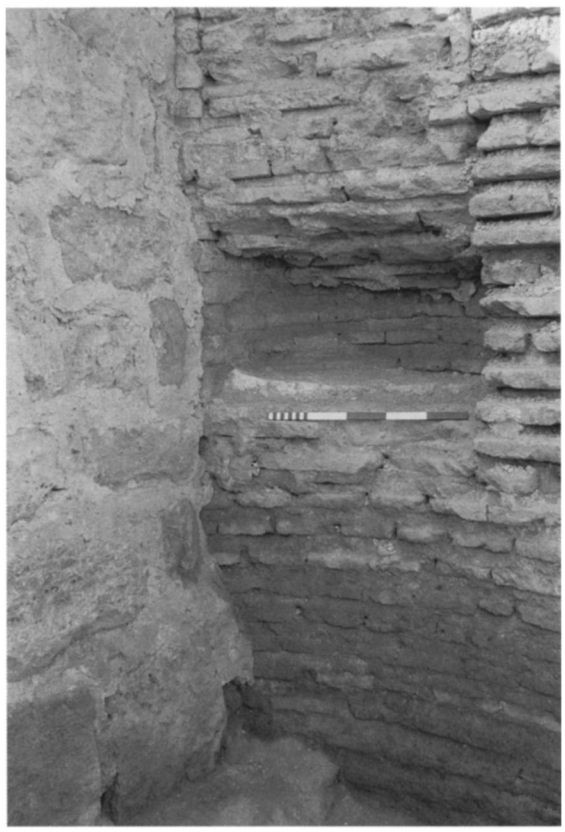
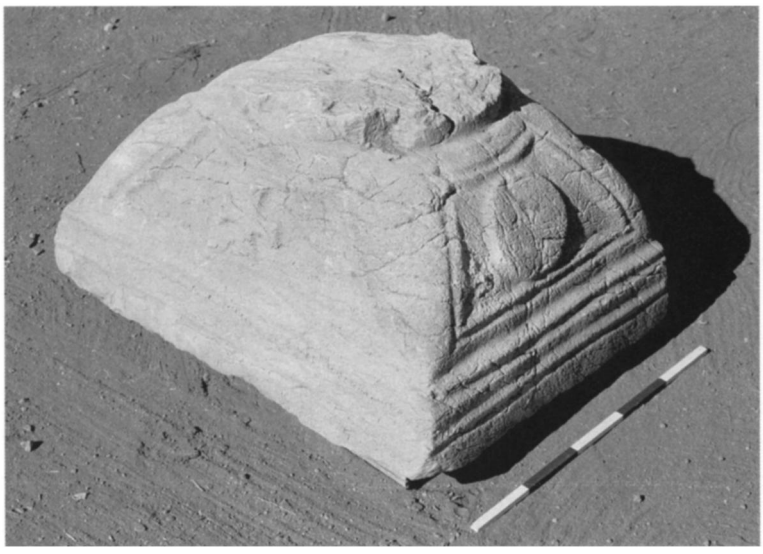
Fig. E (*cont.*)



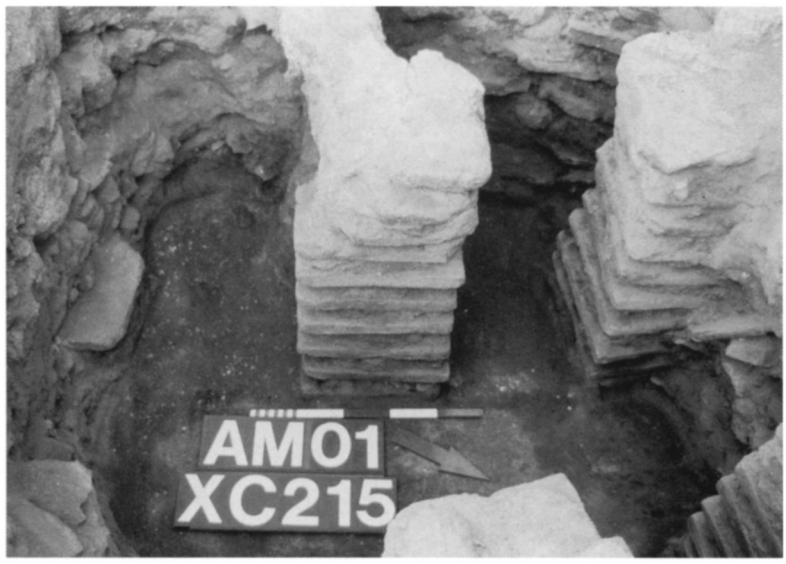
1 Trench XC, polygonal hall, niche immediately to west of blocked entrance (shown at left) to Structure 1 (neg. AM01/08/15)

2 Trench XC, polygonal hall, southeastern niche in alcove to east of blocked entrance to Structure 1, showing mortar setting for marble revetment (neg. AM01/08/09)

3 Trench XC, polygonal hall, general view from the northeast, showing at left relative positions of niches illustrated in Figs. 1 and 2 (neg. AM01/06/18)

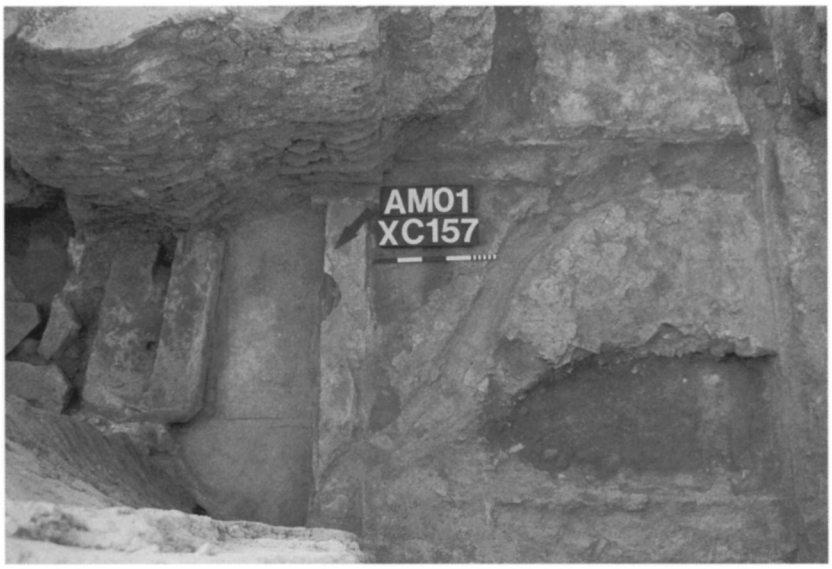


4 T1560, capital from Trench XC, polygonal hall (neg. AM01/07/05)



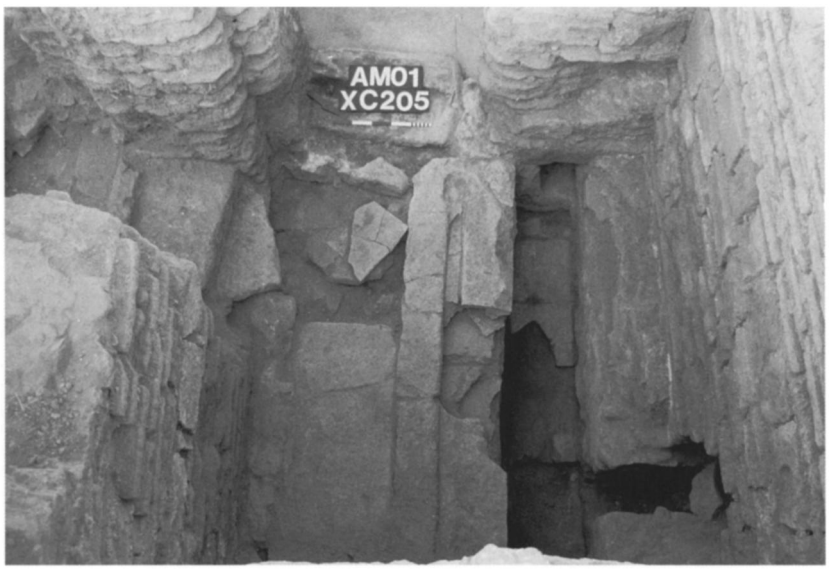
5 Trench XC, Structure 1, *caldarium,* hypocaust pilae (neg. AM01/05/14)

6 Fragmentary jug with Old Testament inscription from Trench XC, Structure 1, *caldarium* hypocaust (neg. AM01/13/25; photo by T. Çakar)

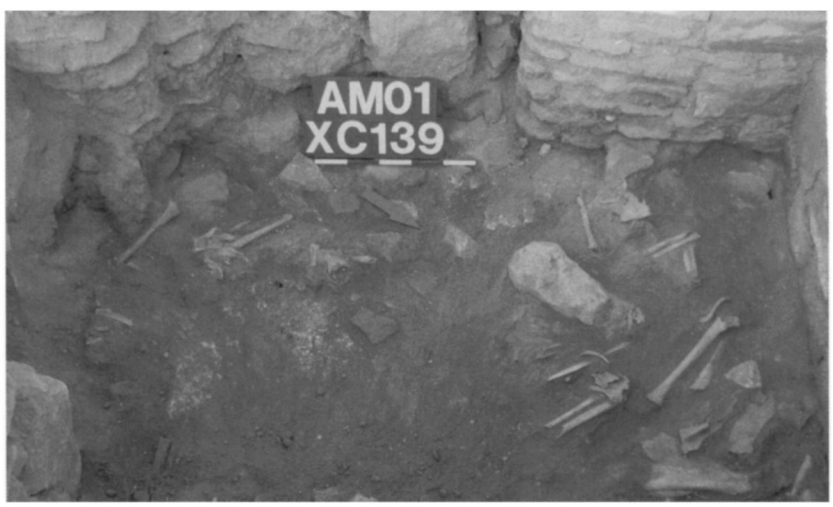


7 Trench XC, Structure 1, apsidal room, floor substratum from the northwest (neg. AM01/04/09)

8 Trench XC, Structure 1, northeastern wall (W137) of vaulted room; drain at north corner, shown bottom left (neg. AM01/07/36A)



9 Trench XC, Structure 1, vaulted room with drain running parallel to and partially under Wall 136, looking southwest (neg. AM01/04/10)



10 Trench XC, Structure 1, Context 139, containing human and animal remains in the vaulted room from the northeast (neg. AM01/01/33)

11 Trench XC, Structure 1, Contexts 145, 153, and 154, installations in the *caldarium* from the northwest (neg. AM01/03/33)

12 Cup (2001-181), cat. no. 13 (Fig. E: 13), from Trench XC, Context 145 (neg. AM01/12/03; photo by T. Çakar)

13 Samples of mosaic tesserae found in AM93/A3-83 (2000-AM93a3_83a.jpg; digital image by J. Witte-Orr)

14 Mosaic fragments found in AM9/A3-84 (2000-AM93a3_84.jpg; digital image by J. Witte-Orr)

15 AM9/A3-83: freshly cut gold and silver tesserae and molten gold tesserae (2000-AM93a3_83c.jpg; digital image by J. Witte-Orr)

installations, possibly used as industrial and storage facilities.[7]

The Polygonal Hall

The earliest phase to which architectural remains can be securely related dates to the fifth or, more probably, the sixth century. The construction of a bathing complex in the center of the city fits well with evidence from other parts of the site, which indicates that Amorium was endowed with a number of new buildings and facilities at that time. They include the Lower City Church and the city walls. There is still no firm evidence for an aqueduct serving the city in Roman and late antique times, but it is generally accepted that an aqueduct is not necessary for a functioning (public) bath.[8]

The polygonal hall was clearly a grand and luxurious space, adorned with a central circular peristyle and embellished with marble revetment on its walls. Since it offered direct access into Structure 1 in its original design, it, too, may have been part of the bathhouse, possibly serving as a large, ornate changing room (*apodyterium*).[9] Alternatively, it may have had a separate function as part of a large private residence, to which Structure 1 also belonged. This interpretation seems less likely, but only further excavation to the north, east, and west of the polygonal hall will prove whether the bathhouse belongs to a larger complex. The room's exterior plan seems to provide for a polygonal design of sixteen sides of roughly equal length (about 1.90 m). To date only six of these have been exposed. On the interior the room has an elaborate plan of deep alcoves, each somewhat more than semicircular, of which three have been completely excavated and another two have been only partially revealed. It may be assumed that a sixth and final alcove lies still buried to the northwest.[10] At least three of the alcoves contain doorways. In addition to the southern passageway into Structure 1, the room could originally be accessed through two other entrances on the southwest and northeast sides. Further excavation will determine whether additional entrance(s) existed at the northern end of the room, following the principle of symmetry. It is not yet clear whether these passageways led into additional halls and rooms or connected with the street or open courtyards. Only part of the northeast doorway was exposed in 2001, but the interior of the southwest entrance, complete with its threshold, was fully excavated. This showed that it was slightly narrower than the doorway into Structure 1 and that its subsequent blocking was made of different materials and so, in all likelihood, completed on a different occasion. Small semicircular niches, 2.60 m in diameter, built into the brick construction of the alcoves' sides, flanked both of these doorways, and similar niches decorate the alcoves on the western and eastern sides of the building. Only the northern alcove, containing the third entrance, does not appear to have niches. The whole of the polygonal hall was built principally of consecutive courses of bricks, bonded together with thick layers of poor-quality mortar; at intervals there are single stringcourses of masonry or individual limestone blocks to give added strength and stability.[11] Although it is not preserved *in situ,* finds from within the room indicate that the hall was also furnished with a limestone architrave decorated with a simple molding. All three of the excavated entrances had subsequently been blocked up, and some of the niches had also been filled in with carefully arranged brick courses (Fig. 1). In places the

[7] The work in Trench XC was supervised by Yoav Arbel, assisted by Georgios Brokalakis, Oğuz Koçyiğit, and Staci Magill. Mini Sharma also participated in the excavations, along with Lander Dunbar, Ivgenia Grigoriev, and Julie Roberts.

[8] J. DeLaine, "Recent Research on Roman Baths," *Journal of Roman Archaeology* 1 (1988): 24; G. G. Fagan, *Bathing in Public in the Roman World* (Ann Arbor, 1999), 72–74 and nn. 106–7; see also H. Manderscheid, "The Water Management of Greek and Roman Baths," in Ö. Wikander, ed., *Handbook of Ancient Water Technology* (Leiden, 2000), 486–90. These views are in opposition to those expressed elsewhere specifically with regard to Byzantine baths; C. Mango, "Addendum to the Report on Everyday Life," *JÖB* 32.1 (1982): 252.

[9] One might usefully compare this hall to the large summer undressing room found in Islamic baths; see M. Dow, *The Islamic Baths of Palestine* (Oxford, 1996), 2, pls. 1–2. There is also the large octagonal hall, marked as the *frigidarium,* in the Roman baths at Buthrotum (Butrint, Albania); I. Nielsen, *Thermae et Balnea. The Architecture and Cultural History of Roman Public Baths,* vol. 2, *Catalogue and Plates* (Aarhus, 1990), 43, no. 353, fig. 245.

[10] The outline of the polygonal hall can now be detected in the results produced by the geophysical survey of the area in 1997; see especially *DOP* 53 (1999): fig. C(a)—a paler area marked between the 20 and 30 m horizontal lines and between the 10 and 30 m vertical lines.

[11] The brick construction of the complex may be compared with that of another early Byzantine building at Yalova; see M. İ. Tunay, "1970 Yılında Yalova'da Yapılan Araştırma—A Survey at Yalova 1970," *TürkArkDerg* 20.1 (1973): 185–93.

interior wall surfaces preserve traces of the plaster setting beds and metal clamps that originally held thin slabs of marble revetment on the walls (Fig. 2).

Essential to the lobed design of the interior was the circular stylobate that was discovered at the center of the polygonal hall (Fig. 3). The external diameter of the stylobate measures 4.60 m, leaving a central hole 2.90 m in diameter. The stylobate comprises twenty-one wedge-shaped limestone slabs (ca. 0.80 by 0.50 m), placed over a solid stone and mortar foundation, measuring 1.30 m in height. The stylobate clearly served to support six columns, whose locations can be determined from the traces of mortar still adhering to the surface of the limestone slabs. Each of the columns thus stood opposite one of the projecting buttresses between the alcoves, and it may be assumed that they once supported a circular architrave and were linked to the buttresses by small brick arches.[12] Three column bases and five capitals, as well as seven fragmentary column shafts, were recovered from the fill within the polygonal hall. It is likely that more architectural elements will be recovered when the rest of the room is excavated in coming seasons. The capitals are all of a similar size and design, and are carved from the same gray-veined marble. They are decorated with four molded frames, one on each side, containing crosses and raised, uninscribed circular bosses (Fig. 4). Parallels may be found in a number of "middle Byzantine" capitals, most notably an example from a church at Kurşunlu in Bithynia.[13] Yet, despite these comparanda from the eighth and ninth centuries, it would seem preferable in the present context to date the capitals to the sixth century.[14] This earlier dating would seem to find confirmation in the large assemblage of sixth-century pottery sherds that was found within the foundation bed of the floor (Context 211, below Context 184) and in a clean context (Context 206) near the lowest courses of the stylobate's foundations.

At some point the polygonal hall was abandoned and allowed to fall into disrepair. Indeed, the lack of a proper floor surface, the loss of most of the marble revetment from the walls, the fragmentary condition of the surviving column bases, shafts, and capitals, and the absence of any roofing materials strongly suggest that the building was actively pillaged, possibly over a considerable period. No substantial signs of burning or violent destruction were found, but, given the way the room was stripped of its furnishings, it may be doubted if such traces would have survived. It is plausible to suggest that this part of the complex was irretrievably damaged in some way, causing its abandonment, after which there seems to have been a gradual accumulation of debris over the whole interior. The fill, comprising largely architectural elements, collapsed brick vaulting, brick and stone rubble, and loose, powdery mortar, was found to contain three eleventh-century coins (SF4083 and SF4119, from Context 152, and SF4109, from Context 184).[15]

As mentioned above, the center of the stylobate was excavated to a depth of 1.30 m. This space, too, contained a fill (Context 183) of debris and discarded material, including a fragment of a human skull. What feature (if any) served as the focal point of the circular peristyle cannot now be ascertained, but it is unlikely to have been a pool since there is no trace of any waterproof lining to the hole or of steps descending into it. Indeed, the hole must originally have been covered over, as indicated by the ledges carved into the inward-facing sides of the stylobate slabs. Whatever this surface was (and whatever may have stood on it), it was all thoroughly removed so that no indication is left of its function or appearance.[16]

[12] Fragments of such arches were found deeply buried within the rubble inside the polygonal hall (one such piece lay at the level of the top of the stylobate itself, indicating the relatively early collapse of the superstructure), but it proved difficult to preserve these examples since the bricks tended to fall apart when attempts were made to remove the fragments whole. This was because of the poor quality of the mortar used in the construction of the building.

[13] M. Dennert, *Mittelbyzantinische Kapitelle. Studien zu Typologie und Chronologie* (Bonn, 1997), 45 and 189 no. 97, pl. 14. We wish to thank Prof. Dr. Eric Ivison for pointing out this reference.

[14] Prof. Dr. Hans Buchwald kindly offered some useful comments on the Amorium capitals, based on photographs that he was shown in New York. More recently, Prof. Cyril Mango has also pointed out that a bath building at Yalova, whose construction is dated to the time of Justin II, includes similar capitals decorated with crosses.

[15] AM01/XC152/SF4083: AE anonymous follis of Class C (1042?–ca. 1050), overstruck on folles of Class B; 27 mm; 7.66 g; 6 h; *DOC* Class C (III.2, 681–684); AM01/XC152/SF4119: AE anonymous follis of Class C (1042?–ca. 1050), overstruck; 30–25 mm; 4.88 g; 6 h; and AM01/XC184/SF4109: AE signed follis of Constantine X and Eudocia (1059–67), class 2; 28–24 mm; 6.87 g; 6 h; *DOC* 9 (III.2, 777–778).

[16] An alternative interpretation might have it perform a separate function within a large private residence, perhaps

The Rectilinear Bathhouse (Structure 1)

During the second phase of occupation a bathhouse was installed or, more probably, reinstalled within Structure 1, and this construction work, which must have been extensive, may well have extended to other buildings within the Enclosure. For example, another large structure of, as yet, undetermined function was erected nearby, Structure 2, part of which was excavated in Trench XC in 1998.[17] Subsequent excavations in Trenches XA and XD have revealed more of its plan.[18] The final determination of the bathhouse's dimensions must await further excavation, but present evidence shows that it was larger than baths found within standard wealthy private homes, yet significantly smaller than examples of public baths known at Roman and early Byzantine cities.[19] The architectural plan, as presently exposed (Fig. C), consists of three main chambers arranged in a row; at the eastern end of the trench, three other areas were defined: a chamber with two apsidal ends, a small square room with a vaulted ceiling, and a larger room or open space containing a well. Although the rough frame of stones around the mouth of the well seems to negate a relation to the bathhouse, the shaft itself may be considerably earlier and could have served as one of the sources for the bathhouse's water supply.

The overall dimensions of the main structure of the bathhouse are 15 by 7 m, with the long sides running roughly from southwest to northeast.[20] The exterior walls were built of ashlar masonry, interspersed with brick courses, and the interior partition walls were made entirely of brick. The long walls (W98/02 and W112) were capped with a simple architrave of limestone slabs (average dimensions 1.40 by 0.60 m). Where it joins the polygonal hall the sheltered angle of the northern wall (W112) retains traces of plaster rendering over parts of its exterior surface. The chamber at the western end of Structure 1 may be identified as the hot room (*caldarium*), followed in sequence by the warm room (*tepidarium*) at the center, and the cold room (*frigidarium*), which may have included a small plunge pool or basin, at the eastern end of the complex. Some marble revetment panels were found still *in situ* on the interior walls, especially in the cold room; in other places, where the marble had either fallen off or been stripped away, the impression of the individual slabs of revetment was visible in the mortar setting that still adheres to the walls.[21] Many of the loose marble slabs found within Structure 1 were covered on their upper surfaces with a thick layer of lime scale—a phenomenon that had been noticed on similar fragments recovered in 1998.[22] This, as well as the discovery of subsurface water channels and drains, further confirmed the fact that Structure 1 had been used as a bath complex. A blocked but imposing entrance, measuring 1.60 m wide and 1.00 m deep and leading from the double apsidal room next to the *frigidarium,* originally connected Structure 1 to the polygonal hall. The only other means of access into Structure 1 so far discovered appears to be in the room containing the well at the eastern corner of the building.

The *caldarium,* measuring 4.50 by 2.10 m, is located at the western end of Structure 1. Originally it may have consisted of two chambers separated by a partition wall, but considerable alterations to the western part of the chamber during its post-bathhouse phase, including its covering with large stone slabs, have obscured such details. Moreover, much of the inner partition walls were demolished in the course of the later reuse of the building, so that only the northern and southern stubs of these walls remain where they join the main exterior walls. The small brick arch built into the western wall (W98/67) of Structure 1, noted in 1998, may now be explained as part of a possible furnace

as an entrance hall or audience chamber, whereas a third interpretation, based on similarities of its plan to known examples, might see it as a martyrium or early Christian shrine; see, for example, W. Ball, *Rome in the East. The Transformation of an Empire* (London, 2000), 359–60, fig. 110. Compare also the plan of the church of St. John the Baptist at Gerasa, completed in 529–533; C. H. Kraeling, *Gerasa, City of the Decapolis* (New Haven, 1938), plan XXXVII.

[17] It has previously been argued that Structure 2 belonged to a later phase of construction than Structure 1; *DOP* 55 (2001): 384.

[18] *DOP* 57 (2003): 288–92.

[19] Nielsen, *Thermae et Balnea,* vol. 1: Text, 105, 109, 111–14 (examples in the eastern provinces).

[20] These measurements are approximate and relate only to the structure between the long walls, W98/02 and W112. The furnace area at the southwest end remained unexcavated in 2001.

[21] Several metal clamps also survived, embedded in the mortar between the brick courses.

[22] *DOP* 55 (2001): 383. In addition, one large fragment, found in 2001 and identified as marmor Thessalicum (*verde antico*), was noted as having a molding carved on its reverse, indicating its secondary use in the building.

(*praefurnium*) immediately adjacent to the *caldarium*.[23] Heat was provided by means of a hypocaust system, consisting of a series of *pilae* made of stacked square bricks (Fig. 5), which raised the height of the floor in the chamber by 0.85 m.[24] The fill within the hypocaust (Context 215) was rich in ash and contained both intact and broken pottery vessels. One such vessel was a fragmentary large coarse ware jug that has an incised Greek inscription running around the shoulder. Although not yet fully deciphered, it clearly begins with a quotation from Psalm 29: 3: + φωνὴ Κ(υρίο)υ ἐπὴ τῶν . . . (ὑδάτων), "the voice of the Lord upon the waters" (Fig. 6).[25]

The *tepidarium,* or warm room, has similar dimensions to the *caldarium,* measuring 4.60 by 2.10 m, and, like the hot room, it underwent extensive alterations when the baths ceased to function. These changes resulted in the fragmentary preservation of the inner partition walls. Small segments of the original plaster floor were exposed still suspended over the surviving *pilae*. The hypocaust here was shallower, measuring only 0.60 m high, but it was filled with a similar thick layer of ash, mixed with fragments of marble slabs and revetment that had formerly covered the floor and walls of the *tepidarium.* In addition to some fragmentary pottery vessels, which remain to be analyzed, a single coin was recovered from the hypocaust fills (Context 235).[26] On the interior face of W98/02 a brick arch was also found at the hypocaust level, perhaps suggesting that a second furnace was attached to the southeast side of the *tepidarium.*

The *frigidarium* appears to have consisted of two separate but adjoining chambers. The southern chamber measures 3.30 by 2.00 m. Its walls had been covered with marble revetment, some of which paneling survives *in situ* on the lower part of the walls. The floor, too, retained some of its marble tiles, although in a rather damaged state, while in the areas where they have been lost altogether the remains of poorly preserved water channels were found below the floor surface. Five coins, including one of Michael II (821–829), came from the floor (Context 213), and two more (not securely identified) were collected from within the fill between the floor level and the subsurface channels (Context 232).[27] The plan of the room included in the east corner a small recess, measuring 0.90 by 0.70 m, where some of the best-preserved sections of marble revetment were exposed. The whole of this chamber suffered considerable damage during the course of the destruction of the bathhouse and the subsequent alterations to Structure 1.

The northern chamber has a double apsidal plan, measuring 3.90 by 1.80 m, with a roughly square central section flanked by semicircular niches at its western and eastern ends. It originally served as a connecting room, having a wide doorway in its northern wall that gave access to Structure 1 from the large polygonal hall. This doorway or entrance was also flanked by niches, although they are much smaller and less imposing than those in the apsidal room, and they probably do not extend down to floor level. At a later and, as yet, undetermined date the entrance was blocked up with a solidly built masonry wall (W121) of large stone blocks and a hard mortar. The apsidal room is remarkably well preserved, with its western and northern walls still reaching a height of ca. 2.50 m. Little of the original marble revetment survives *in situ,* but the plaster settings preserve the impressions of numerous individual slabs. Later the chamber was deliberately filled with a mass

[23] *DOP* 55 (2001): 382 and fig. 14.

[24] The brick walls of this chamber may also have contained vertical channels for hot air to circulate up behind the marble revetment; for comparisons, see F. Yegül, *Baths and Bathing in Classical Antiquity* (New York–Cambridge, Mass., 1992), 363–65.

[25] We wish to thank Prof. Dr. Th. Drew-Bear for his comments on this inscription, and Georgios Brokalakis for drawing attention to parallels on two bronze jugs found at Corinth; see G. L. Davidson, *Corinth,* vol. 12, *The Minor Objects* (Princeton, 1952), 73–74, nos. 557–58, pl. 51 and fig. 3. The inscription will be studied further during the 2002 season. A similar inscription also appears on two vessels from the Balkans—the silver gilt jug or ewer in the Vrap Treasure, dated by its official stamps to the 7th century, and a jug found in Kostol, Serbia, in a domestic context of the second half of the 9th century: C. Bálint, "Some Avar and Balkan Connections of the Vrap Treasure," in K. R. Brown, D. Kidd, and C. T. Little, eds., *From Attila to Charlemagne. Arts of the Early Medieval Period in The Metropolitan Museum of Art* (New York, 2000), 185.

[26] AM01/XC234/SF4144: AE; 26.5 mm; 3.32 g; ?h; very corroded, overstruck; uncertain, 9th–10th century (?).

[27] AM01/XC213/SF4182: AE follis, class 3a, 29 mm; 9.54 g; 6 h; *DOC* 9 (III.1, 398). AM01/XC232/SF4139: AE follis; 27–25 mm; 8.99 g; very corroded; Phocas (602–610), mint of Antioch (?), as Morrisson 8/An/AE/02–12, A.D. 602–609. AM01/XC232/SF4140: AE; 20–13 mm; 2.89 g; ?h; very worn and clipped; Dark Ages, second half of the 7th century (?).

of rubble masonry, but it would seem likely that the interior was stripped of its wall revetment and other furnishings (such as internal partitions, basins, floor coverings, etc.) before its final abandonment. As a consequence any installations that might have shed light on the original function of the chamber have not survived. The remains of marble panels were, however, discovered still *in situ* at the base of the surviving western partition wall. The remains of a drainage system were also found in the subsurface layer of the floor (Fig. 7). This drain led into the vaulted room to the northeast (see below). Two or three phases of use, therefore, can be postulated for the apsidal chamber: (1) as an entranceway leading from the polygonal hall, (2) as an enclosed chamber with some bath-related function, and (3), possibly contemporaneous with phase 2, as a chamber linked at one end to the vaulted room.

The Vaulted Room

At the northernmost part of Structure 1 a small room, measuring 2.10 by 2.20 m, was exposed. The room was preserved to a considerable height, and its northwest wall (W136) included the remains of the springing of a brick barrel vault for the ceiling, estimated as ca. 2.50 m above the original floor level. Although adjacent to the apsidal chamber, this room was not originally connected to it. Nevertheless, it clearly forms part of the entire complex since the vaulting for its ceiling is integral to the brick fabric of Structure 3 and has roughly the same absolute elevation as the architrave blocks of Structure 1. The room's northeastern wall (W137), whose interior face was exposed in the balk of the trench, comprises irregular stone masonry at the bottom and brick courses at the top (Fig. 8). It, too, is part of the original construction of the complex, although in the middle of the wall three large stone blocks have been inserted into the brickwork, giving the impression of a blocked window. Initially, it would seem that only a small doorway on the southeast side provided access to this room. Later, however, another small doorway led from this vaulted room into the eastern apse of the adjacent chamber. This alteration may reasonably be associated with the blocking of the entranceway from the polygonal hall. The drainage channels found in the subfloor level of the apsidal chamber lead off through this doorway into the vaulted room, indicating that both rooms served (at least) at a secondary stage as part of the bathhouse. Indeed, it may be suggested that the general appearance of the vaulted room is that of a small latrine. This would certainly help to explain the presence of a large, deep drain running along and partially under the northwest wall and the raised marble ledge that runs across the room parallel to the same wall (Fig. 9).

The makeshift entrances (1.00 m wide) that had been improvised between the double apsidal chamber and the vaulted chamber to the east, and between the vaulted room and the adjacent room or yard to the south, were subsequently blocked with rubble walls. The vaulted chamber was then evidently put to some different use, perhaps for dumping waste, as indicated by large amounts of animal bones found in the deep fill (Context 139; Fig. 10). The fill, however, also contained the disarticulated human remains of at least three adult individuals (see below, p. 367), and four coins, three of which were anonymous folles, all of Class I (dated ca. 1075–80, SF4043, SF4044, and SF4045).[28] The layer containing these significant finds was buried beneath a mass of rubble masonry, which may have been added in only relatively recent times when attempts were made by the present-day villagers to turn the Enclosure into productive farming land. Certainly, it may be doubted whether the piles of stones were thrown into the chamber immediately on top of the disarticulated human remains since the skulls had survived in a relatively intact state. The manner in which the human remains came to be deposited in the room cannot now be reconstructed with any certainty. One interpretation is that the bodies had been left exposed on the ground elsewhere, and that their remains were subsequently collected up and dumped into the room, together with the animal remains and

[28] AM01/XC139/SF4043: AE follis; 25.5–24 mm; 2.79 g; 6 h; AM01/XC139/SF4044: AE follis; 25.0–24.5 mm; 4.40 g; 6 h; AM01/XC139/SF4045: AE follis; 22.0–20.5 mm; 3.49 g; 6 h; *DOC* Class I (III.2, 696–699). The remaining coin was a Roman provincial issue of Valerian I, Gallienus, and Valerian II (253–260) from the mint of Nicaea: AM01/XC139/SF4047: AE; 24–23.5 mm; 7.69 g; 12 h; holed, probably used as a Byzantine pendant; *BMC* 151, *SNG VA* 720.

coins. Whatever the circumstances of their deaths, however, it seems very likely that these individuals represent some of the final inhabitants of Byzantine Amorium.

Bathhouse Complex: General Conclusions

In addressing the question of whether small city baths (*balneae*) survived or died out during the seventh and eighth centuries, F. Yegül was of the opinion that "two- or three-room neighborhood baths, often with a simple row plan . . . , may have existed during this period without leaving distinct archaeological and literary records."[29] The Amorium bathhouse within Structure 1 thus provides exceptional evidence for the continued use of bathing establishments (whether public or private) during the Dark Ages. In all likelihood the early Byzantine complex that included the polygonal hall served a similar purpose, and certainly in construction technique and layout the Amorium bathhouse fits well into the pattern of late Roman and early Byzantine baths. So, for example, the two main walls (W02 and W112) running the length of Structure 1 are constructed in *opus mixtum,* small stone blockwork alternating with bands of brick, similar to the baths found near the Topkapı Palace in Istanbul in the 1970s.[30] Indeed, the whole complex may be seen as another example of the transition in bathhouse design whereby the *frigidarium* with a large public pool is replaced as the main focal point by a spacious "bath hall" or "lounge-*apodyterium.*"[31] Likewise, in place of large communal pools there are small individual basins, tubs, and bathing alcoves, such as have been found in Structure 1. On the other hand, there is no sign in the layout of the Amorium bathhouse of a section reserved specifically for women, as seems often to have been the case in late Roman/early Byzantine baths. Perhaps, as at Asine in Greece, a small separate building lies nearby but remains as yet unexcavated.[32]

Many questions concerning the supply, distribution, and storage of water for the bathhouse remain unresolved. It seems very unlikely that from the seventh century onward an aqueduct could have been maintained by the city (even if one existed to supply Roman Amorium), and consequently it would have been necessary to find other means to keep the baths supplied with fresh water. This may provide the context not only for the construction of the well in the room at the eastern end of Structure 1 but also, perhaps, for other features found in the Enclosure excavations.[33] There are questions, too, regarding the water-heating system, the consumption of fuel, and, indeed, the payment of the day-to-day running costs of the establishment. Yegül has pointed out that many of the Syrian baths dated to the late fifth and sixth centuries are associated with inns and lodgings provided for merchants and travelers.[34] Since Amorium lay on a major pilgrimage route across Anatolia from Constantinople to the Holy Land, it may be suggested that perhaps the bathhouse complex was built to serve such clients. In this context the crosses decorating the capitals found in Structure 3 and the biblical inscription on the jug found in the ruins of the hypocaust in Structure 1 are suggestive of the fact that the complex had religious associations, and that these extended over a considerable period of time. But, at the very least, the present evidence implies that considerable effort was made to retain some semblance of urbane and cultivated life at Amorium during the Dark Ages.

All available evidence also points to the fact that the whole complex suffered irreparable damage from a natural or manmade catastrophe, which led to the complete abandonment of the bathing facilities in Structure 1. Whether the ash layers found within the hypocaust cellars can be attributed to the building's violent destruction by fire or to the natural accumulation of ash from the furnaces that heated the rooms remains uncertain. It is, however, tempting to associate the radical change in fortune

[29] Yegül, *Baths and Bathing,* 315. At Constantinople the *thermae* of Constantine were still in use in the 8th century; ibid., 324 and n. 74.

[30] Yegül, *Baths and Bathing,* 324, fig. 412, and refs. in n. 79 (for other baths of a simple row-type plan).

[31] Yegül, *Baths and Bathing,* 329 and n. 88.

[32] Nielsen, *Thermae et Balnea,* vol. 1: Text, 116.

[33] Several of these may be recalled: the row of troughs found in 1996 and 1998, the drain or channel found in 2000, and the use of part of Structure 2 as a cistern, also noted in 2000. However, these comments are intended only as very preliminary remarks on the possible functioning of the area currently exposed. It is hoped that future work will clarify the situation so that a more confident and secure interpretation of the various features can be made.

[34] Yegül, *Baths and Bathing,* 329, 333–34.

that befell Structure 1 with the events of 838. Certainly, the resettlement and reconstruction of Amorium after this major event would be an appropriate time at which to place the stripping of furnishings and architectural elements from the complex.

The Pottery (by B. Böhlendorf-Arslan)

Work in the Ceramic Depots

In 2001 work continued on the Byzantine, Seljuk, and Ottoman pottery from the excavations, with the main focus being devoted to the study of the ceramic finds from Trench AB.[35] A triangular tower that formed part of the city defenses was uncovered in this area of the Lower City between 1990 and 1993. The excavation of the interior of the tower revealed some stratified contexts relating to the destruction of the tower and its earlier use.[36] Wood samples found *in situ* in the destruction deposits have been analyzed by the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology at Cornell University. The results have dated the construction of (at least) part of the internal superstructure of the tower to post-487. The lowest layers within the tower (e.g., Context AB330) contained a mixture of Late Roman C, African Red Slip Wares, Grey Coated Ware, and Common Wares of the sixth and first half of the seventh century.[37] The upper layers, on the other hand, produced mostly Kitchen Wares that are dated in the eighth and ninth centuries. The pottery in the layers near the topsoil (e.g., Trench AB, Context 147) comprises Common Ware vessels that are typical for the tenth and eleventh centuries.[38] The finds include coarse-made, flat-bottomed cooking pots with a handle fixed direct on the lip, pithoi decorated with scratches, and small fragments of imported (from Constantinople?) Glazed White Ware II, which also dates to the tenth century.[39] The last phase of occupation within the tower has been associated with the Arab attack of 838 on the basis of coin evidence; analysis of the pottery finds confirms this view, but a resettlement of the area in middle Byzantine times is also attested by the ceramic evidence.[40] In the 2002 season work will continue on the analysis of the ceramic finds from Trench LC, which, like Trench AB, seems to have good stratified contexts containing late Roman to middle Byzantine pottery. With the material from these two trenches it should be possible to provide a more accurate and valid basis for the identification of the various wares and vessel shapes that are representative of Byzantine pottery from the mid-seventh to the second half of the eleventh century. With the arrival of the Turks in central Anatolia after 1071, occupation in this part of the site seems to come to an abrupt end.[41] The results from this study of the finds at Amorium will constitute a major contribution to our understanding of the pottery of Asia Minor in the Dark Ages and the middle Byzantine period.

New Pottery Finds from the Campaign of 2001: A Pottery Assemblage from Trench XC, Context 145

Although it was not possible to study all of the pottery found during the 2001 season, some interesting ceramic material came to light in the course of the excavations in the Lower City Enclosure. In particular, a rich deposit of pottery sherds was found within Trench XC in one of a cluster of small installations inside Structure 1. This assemblage was recorded and drawn. The installations, built of fieldstones, appear homogeneous and contemporaneous (Contexts 145, 153, and 154; Fig. 11). They were fitted within

[35] Two students, Oğuz Koçyığıt and Hüseyin Yaman, from Onsekiz Mart University at Çanakkale, Turkey, assisted in the processing and drawing of the objects.

[36] C. S. Lightfoot, "Amorium Kazısı 1993," in *XIV. Kazı Sonuçları Toplantısı*, vol. 2 (Ankara, 1994), 134–35, figs. 3–4; *AnatSt* 44 (1994): 120.

[37] J. W. Hayes, *Excavations at Saraçhane in Istanbul*, vol. 2, *The Pottery* (Princeton, 1992), 5–8, fig. 20, fig. 35, Deposit 21, 2–4, Deposit 22, fig. 36, Deposit 24, 2, Deposit 25bis, 3–5, fig. 37, Deposit 26, 2, 4; C. Williams, *Anemurium. The Roman and Early Byzantine Pottery* (Vancouver, 1989), 47, fig. 22, 263–65; 78, fig. 43, 454–55.

[38] The closest parallels to the 10th- and 11th-century Kitchen Wares at Amorium are provided by the pottery from the Byzantine village settlement at Boğazköy. The present author is also preparing the publication of the Boğazköy material.

[39] Hayes, *Saraçhane*, 18–29; see also B. Böhlendorf-Arslan, "Glasierte byzantinische und in der byzantinischen Tradition stehende Keramik aus Türkisch-Thrakien und Westanatolien," (unpublished Ph.D. thesis, Heidelberg, 1999), 133–36.

[40] Like the nearby Trench LC, where the last settlement also dates to the 11th century: *DOP* 51 (1997): 297–98; C. S. Lightfoot and Y. Mergen, "1996 Yılı Amorium Kazısı," in *XIX. Kazı Sonuçları Toplantısı*, vol. 2 (Ankara, 1998), 349–50, figs. 10–11.

[41] Lightfoot and Mergen, "1996 Yılı," 349.

the elevated surface of the room that had previously been used as the bathhouse's *caldarium.* The fill of two of the installations (Contexts 153 and 154) comprised mainly ash and animal bones, mixed with a small amount of pottery sherds, but Context 154 also produced a copper alloy follis of Nikephoros II (963–969; SF4082).[42] The third installation to the south (Context 145) contained, in addition to ash and animal bones, a dense concentration of pottery sherds of unusual high-quality wares with very similar fabrics. The study of this material revealed that Context 145 contained thirteen different vessels, which can be divided into three main groups based on their fabrics.

Ware 1 This ware is represented by only one jug (Fig. D: 1), made of brown clay with fine inclusions of mica, limestone, and quartz. A type of cooking ware with similar specific features was recorded among the pottery finds from Saraçhane, but J. W. Hayes does not include any jugs or other tableware among the listed examples of this so-called Micaceous Brown Ware, which he dates principally to the eighth century.[43] Moreover, the Saraçhane material does not provide a close parallel for the shape of the jug found at Amorium. In shape, but not in fabric, the most analogous example that can be cited appears to be a plain jug from the excavations at Emporio on Chios.[44]

Ware 2 A jug and some fragments of cooking pots made of reddish-yellow, red, or dark red clay mixed with fine limestone and quartz particles belong to this group (Fig. D: 2–5). These fragments correspond in fabric to the Saraçhane "Main Middle Byzantine Series," which dates generally from the tenth to twelfth centuries.[45] However, the Saraçhane examples consist only of cooking wares, and tablewares such as the jug from Amorium are unknown. The Amorium cooking pots display the common "Tsoukalia" shapes[46] that have also been found in Constantinople at Saraçhane,[47] Hagia Irene,[48] and the Great Palace,[49] as well as on Aegina[50] and, as a smaller cup-shaped vessel, in the seventh-century shipwreck at Yassı Ada.[51]

Ware 3 This group represents the majority of the pottery found in the installation. The high-quality ware was made of dark reddish-gray, reddish-yellow, yellowish-red, or red clay with inclusions of limestone and quartz. Additionally, some of the vessels with reddish-yellow clay show a distinct core of dark reddish gray color. All of them were made with a thin-walled body, while the smooth exterior surface of the vessels is characterized by the presence of polishing marks. The shapes of this ware comprise cooking pots as well as tableware in a variety of shapes—jugs, a cup, and a low bowl (Fig. E: 6–13). It has proved difficult to find good parallels. The fabric is quite distinct and does not bear a close resemblance to that of the "Fine Orange-Red Burnished Ware," dated to the late tenth and eleventh centuries, from the Saraçhane excavations. Likewise, the group includes shapes that are not represented at Saraçhane.[52] A handled bowl from Varna in Bulgaria, although published as being of Ottoman date, may be related in shape to the Amorium cup.[53] The shape of the bowl (Fig. E: 12) suggests a

[42] AM01/XC154/SF4082: AE follis, class 1; 26–25 mm; 5.27 g; 6 h; overstruck; *DOC* 7 (III.2, 586–587). Three other folles of Nikephoros II (SF4080, SF4081, and SF4145) were recovered from the foundations of a floor above the hypocaust in the *tepidarium:* AM01/XC147/SF4080: AE follis, class 1; 28.5–26.5 mm; 5.50 g; 6 h; overstruck on follis of Romanos I, class 4; AM01/XC147/SF4081: AE follis, class 1; 26–25 mm; 5.47 g; 6 h; overstruck on follis of Constantine VII, class 5; AM01/XC235/SF4145: AE follis, class 1; 25.5–22 mm; 5.25 g; 6 h.

[43] Hayes, *Saraçhane,* 55–57.

[44] M. Balance et al., *Excavations in Chios 1952–1955* (Oxford, 1989), 103, no. 191, fig. 32. The pottery from the destruction layer of the fortress is generally given a mid-7th-century date.

[45] Hayes, *Saraçhane,* 57–59.

[46] Ch. Bakirtzis, *Βυζαντινὰ Τσουκαλολάγηνα* (Athens, 1989).

[47] Hayes, *Saraçhane,* fig. 20, 4; 138, fig. 80, 114 (also with a ribbed surface, but dated to the early 12th century).

[48] U. Peschlow, "Byzantinische Keramik aus Istanbul. Ein Fundkomplex bei der Irenenkirche," *IstMitt* 27–28 (1977–78): 409–11, fig. 18, 120, pl. 143, 4 (dated mid-9th to end of the 10th century).

[49] D. Talbot Rice, ed., *The Great Palace of the Byzantine Emperors: Second Report* (Edinburgh, 1958), 110–11, fig. 22, A, B.

[50] F. Felten, *Die christliche Siedlung, Alt-Ägina,* vol. 1.2 (Mainz, 1975), 69–70, nos. 103–4, fig. 13, pl. 21.

[51] G. F. Bass, "Underwater Excavations at Yassı Ada: A Byzantine Shipwreck," *AA* 77 (1962): 550, fig. 11; G. W. Bass and F. H. van Doorninck, Jr., *Yassı Ada,* vol. 1 (College Station, Tex., 1982), 172, P32, fig. 8–23.

[52] Hayes, *Saraçhane,* 50, fig. 18.

[53] V. Pletniov, "Récipients hygiéniques de Varna, du XVIe–début du XIXe siècle," *Archaeologia* 41.3–4 (2000): 87–88, fig. 4, 40.

metal prototype, although this does not help in providing a date since similar shapes are well known in both late Hellenistic and Roman pottery[54] and among middle and late Byzantine glazed ceramics.[55]

Some thin-walled bowls and pots from Saraçhane may display some, but not very close, similarities to the Amorium assemblage in fabric and shape. However, because of their unusual fabrics and shapes the pottery from Context 145 is quite difficult to date. The quality and rarity of the assemblage tempts one to attribute it to the second half of the eighth century, so that it would correspond to the earlier examples at Saraçhane, Aegina, and Yassı Ada.[56] This may receive some additional support from the fact that the finds from Amorium bear no relationship to the material from the tenth- and eleventh-century Byzantine settlement at Boğazköy. However, although the comparison with the Saraçhane wares does not fit exactly, the Amorium pottery from Context 145 seems to date, like the majority of the Saraçhane material, to the tenth century. The follis of Nikephoros II (SF4082), found in the adjoining installation (Context 154), may provide some confirmation for such a date for the deposit. In future seasons new finds at Amorium may help to shed more light on the chronology of Byzantine pottery in the eighth to eleventh centuries.

Catalogue of the Pottery from Trench XC, Context 145 (AM01/XC145)[57]

1. Jug (2001-225). Fig. D: 1. DR. 7.3 cm; DB. 8.55 cm; DH. 1.2/2.0 cm; H. 15.0 cm. Broken into fourteen fragments; some sherds from body, bottom, and handle are missing. Fabric: brown (E10) with fine mica, limestone, and quartz. Rough crumbly fracture. Reddish-yellow surface (D9). Decoration: many horizontal incised lines on the body and neck, and in a plain band around the shoulder a wavy line. Some scratched lines on the handle.
2. Jug or jar (2001-232). Fig. D: 2. DR. 8.8 cm; H. as extant 3.15 cm. Single fragment of a rim. Fabric: reddish yellow (D9) with fine limestone and quartz. Rough crumbly fracture. Smooth reddish-yellow surface (D10).
3. Cooking pot (2001-234). Fig. D: 3. DR. 15.6 cm; H. as extant 12.4 cm. Seven rim and body fragments of a globular pot; upper part is preserved. Fabric: red (E11), with limestone and quartz; porous. Rough crumbly fracture. Red surface (E11), outside well smoothed. Decoration: horizontal incised lines on the rim, neck, and body.
4. Cooking pot (2001-226). Fig. D: 4. DB. 12.4 cm; H. as extant 6.1 cm. Four fragments from the bottom of a pot. Fabric: red (E11) with limestone and quartz, less porous. Rough crumbly fracture. Yellowish-red (E10) surface inside, dark gray (A11) and traces of fire at surface outside.
5. Cooking pot (2001-227). Fig. D: 5. DB. 14.6 cm; H. as extant 4.9 cm. Two fragments from the bottom of a pot. Fabric: dark red (E12) with limestone and quartz; less porous. Rough crumbly fracture. Dark reddish-gray surface (A9) with traces of fire.
6. Jug (2001-233). Fig. E: 6. Interior D. of neck 7.9 cm; H. as extant 11.6 cm. Six fragments are preserved from the neck and shoulder of the vessel; the rim, most of the body, and the base are missing. Fabric: red (E11), gritty, with fine limestone, quartz, and black particles; fine porous. Rough crumbly fracture. Red surface (E11), outside with some polish marks. Decoration: a narrow ridge around the base of the neck, horizontal incised lines on the body.
7. Jug (2001-230). Fig. E: 7. Interior D. of neck 5.6 cm; DH. 2.7/1.3 cm; H. as extant 12.2 cm. Single fragment with part of a handle attached to a biconical body. Fabric: red (E11), with limestone and quartz; porous. Rough crumbly and

[54] H. S. Robinson, *Pottery of the Roman Period: Chronology*, The Athenian Agora 5 (Princeton, 1959), 11, pl. 60, F7, F11.

[55] Böhlendorf-Arslan, "Glasierte byzantinische Keramik," 44, pl. 3, G9.

[56] Hayes, *Saraçhane*, 55–57; Felten, *Die christliche Siedlung*, 67; Bass and van Doorninck, *Yassı Ada*, 178, P60, fig. 8–16.

[57] Key: DR. = diameter of rim; DB. = diameter of bottom; D. = diameter; DH. = diameter of handle; H. = height. The color of the fabrics was determined according to the C.E.C. Color Charts.

cracked fracture. Thin, dark grayish-red slip (A10) inside, yellowish-red (E10) polished surface outside. Rough crumbly fracture. Decoration: horizontal incised lines on the body and neck, small plastic dot at the base of the handle.

8. Jar or jug (2001-228). Fig. E: 8. Interior D. of body 19.2 cm; H. as extant 11.3 cm. Two fragments from the upper part of the globular body of a jar. Fabric: dark grayish red (A9) with very fine to big pieces of limestone and quartz; porous. Smooth fracture. Dark grayish-red (A9) surface inside, polished brown (D11) surface outside.
9. Jar or jug (2001-224). Fig. E: 9. Interior D. of neck 5.8 cm; H. of fragments 11.7 and 8.7 cm. Eleven fragments from the upper part of the body and neck of a flask or jug. Fabric: yellowish red (E10) with a thin gray core, small limestone and quartz; sandy and porous. Rough crumbly fracture. Reddish-yellow surface (D11), polished at outside. Decoration: horizontal incised lines on the body.
10. Jar or cooking pot (2001-229). Fig. E: 10. Interior D. of body 13.6 cm; H. as extant 7.8 cm. Two body fragments of a globular pot or jar. Fabric: reddish yellow (D10) with a distinct dark grayish-red core (A9), fine limestone and quartz, porous. Rough crumbly fracture. Reddish-yellow (D10) surface, polished outside. Decoration: one horizontal incised line on the shoulder.
11. Cooking pot (2001-231). Fig. E: 11. DB. 9.2 cm; H. as extant 7.55 cm. Single fragment from the bottom of a globular pot. Fabric: reddish yellow (D9) with a distinct dark gray core (A11), occasional small limestone and quartz inclusions. Smooth fracture. Brown (D11) surface inside, polished reddish-yellow (D10) outside.
12. Bowl (2001-182). Fig. E: 12. DR. 18.2 cm; DB. 8.5 cm; H. 7.0 cm. Eight fragments of a nearly complete bowl with ring foot. Fabric: reddish yellow (D10) with distinct dark reddish-gray (A10) core, limestone and quartz; less porous. Smooth fracture. Reddish-yellow (E9) surface inside with dark reddish-gray (A10) traces of fire. Slightly polished reddish-yellow (D10) surface on exterior.
13. Cup (2001-181). Fig. E: 13 and Fig. 12. DR. 14.6 cm; DB. 9.7 cm; DH. 1.0–1.25/2.2–2.3 cm; H. 11.05 cm. Five fragments of an almost completely preserved cup with a handle; only some small pieces at the rim and body are missing. Fabric: reddish yellow (E9) with distinct dark reddish-gray (A9) core, very fine limestone and quartz; porous. Smooth fracture. Reddish-yellow surface (D9–D10), outside slightly polished, with traces of fire. Decorations: two horizontal incised lines on the body, a plastic dot on the top of the upper end of the handle. On the base a spiral-formed graffito.

The Human Skeletal Remains (by J. A. Roberts)

Human skeletal remains from seven different contexts were analyzed.[58] Five of these contexts (Trench XC, Contexts 139, 160, 183, 205, and a surface find from the Lower City Walls in Trench AB/LC) were excavated during 2001, and the sixth, the tomb in the narthex of the Lower City Church, was excavated in 1998. A cranium from a rock-cut tomb, discovered by a villager in 1997, was also analyzed. With the exception of the individuals from the narthex tomb, all of the remains were disarticulated. Here only the archaeological context and state of preservation of the remains from the Church and Context 139 in Trench XC are summarized.

Remains from the Narthex Tomb

The bone finds from the tomb had been stored since 1998 in two boxes labeled "Individual One" and "Individual Two."[59] Initial examination of the skeletal remains revealed, however, that there was some mixing of the bones, and also that the remains of some additional individuals were present—presumably the previous occupants of the tomb. In addi-

[58] A more detailed report on the human skeletal remains found at Amorium between 1993 and 2001 has now appeared in C. S. Lightfoot, ed., *Amorium Reports II: Research Papers and Technical Studies,* (Oxford, 2003), 159–84.

[59] For a full report on the excavation of the tomb in 1998, see *DOP* 55 (2001): 374–79 and figs. B–F, 7–10.

tion, the majority of the bones, particularly those from "Individual Two," were in a poor state of preservation. These factors made a full analysis of the remains more difficult and problematic, but it was nevertheless possible to draw a number of important conclusions. Both "Individual One" and "Individual Two" could be identified tentatively as male, and degenerative changes that could be observed on some of the surviving bones suggested an age of greater than forty years at death for both individuals. Additional foot bones were identified along with those that could be attributed to the two supposed occupants of the tomb, indicating that a further two adult individuals had been buried there. Moreover, the remains of a young child were also identified. The size of some of these bones was consistent with a child aged around three to five years.

Thus careful study of the fragmentary remains revealed that the tomb found beneath the floor in the narthex of the Lower City Church contained in total a minimum of five individuals—four adults and one young child. It may be assumed that the better-preserved remains of "Individual One" and "Individual Two" represent secondary burials, whereas the two adults attested only by parts of their feet, together with the young child, were the primary occupants. The evidence, therefore, may suggest that the tomb was constructed originally for an important family but was later reused for two elderly men, perhaps clerics.

Remains from Trench XC, Context 139

Two piles of bones were recovered from a single layer (Context 139) in the vaulted room of Structure 1 (see above, p. 361 and Fig. 10), and a single maxilla was found approximately 0.5 m away within the same context. A considerable amount of animal bone was overlying and mixed in with the human remains. The two piles were initially thought to represent two separate individuals, but it quickly became evident that the deposits were mixed and that additional repeated skeletal elements were present. The minimum number of individuals in the assemblage was estimated by counting repeated skeletal elements, and this revealed that the remains of at least three individuals had been buried in the room.

Many of the surviving fragments were eroded and cracked as a result of weathering, and a number were also discolored. In addition, the shafts of the long bones were without exception broken, and it may reasonably be assumed that this damage had been caused by animals such as large dogs or wolves. Likewise, puncture marks made by the teeth of such animals were observed on several fragments of pelvis. The majority of the fractured ends of the bones had subsequently been gnawed by rodents, and several of the shafts of the bones also showed evidence of gnawing. By contrast, the crania and in particular the dentition were quite well preserved, although some postmortem breakage had occurred. It may, therefore, be concluded that the dead (or dying) individuals had been left unattended and had suffered from the attentions of scavenging carnivores. The weathering of the bones and the damage subsequently caused to them by foraging animals further indicate that they had lain exposed above ground for a considerable amount of time before they were collected up and deposited in the room.

The sex of two of the individuals could be determined by cranial and pelvic morphology. One was clearly male and the other female. The sex of the third individual was ambiguous: the remaining pelvic fragment was male in morphology, but the maxilla was more female in appearance. As the female cranium already had a maxilla, this could not have belonged to her, and it was too small to belong to the male whose maxilla was missing. In addition, the loose maxillary teeth did not fit into the sockets. It is possible that the maxilla represented a fourth individual, but, as there were no more repeated elements, this seems unlikely. A possible male sex was, therefore, assigned to the third individual, based on the morphology of the pelvis and size of the postcranial remains. The age at death of the two principal individuals could be estimated as around thirty to forty years. The maxilla from the third individual looked considerably older, suggesting an age of greater than forty-five years at death.

The disarticulated and fragmentary state of the remains meant that a complete assessment of any skeletal pathology could not be made. In particular, the almost total absence of any joint surfaces precluded the identification of any

kind of joint disease. The dentition was, however, sufficiently well preserved to allow the identification of oral pathology, and examples of iron deficiency anemia and of infection were also recorded. There was, in addition, some striking evidence for traumatic injury. The younger of the two males had sustained a severe fracture to the left parietal bone of the skull. There was no remodeling of the edges of the fractures, indicating that they were sustained around the time of death. The edges of the primary fracture were at an angle and smooth at the posterior and anterior ends, suggesting that the injury was caused by a fairly blunt blade. The location of the injury also implies that the aggressor was right-handed and standing behind the victim at the time of attack.

The lack of oral pathology in the female and younger male, together with the presence of iron deficiency anemia in the latter, suggests a diet low in sugar and red meat. This might imply that they were not from the upper echelons of society, and these results form a stark contrast to those from the individuals buried in the rock-cut tomb. Many parts of the skeleton were entirely missing, and all three were disarticulated, although photographs taken of the bones *in situ* during excavation showed parts of the upper and lower limbs were in alignment, suggesting that they may have been partially articulated when they were buried. A large amount of animal bone was mixed in with or overlay the human bone, and there was little respect or formality accorded to the burials. This, again, might be taken as a reflection of their place in society.

The Fresco and Mosaic Fragments from the Lower City Church (by J. Witte-Orr)[60]

Frescoes

During the excavation of the Lower City Church many large masonry blocks with adhering fresco fragments of varying sizes were found and removed for safekeeping. There are presently forty-eight blocks stored in the stone depot at the Dig House. Thirty-five of these were found in the center bay of the south aisle, five in the east bay of the south aisle, three in the *bema,* and one each in the western part of the *naos* and the center bay of the north aisle. One block was also recovered in 2001 from a wall of an outhouse in the village, and several more have lost their context tags since their excavation. A study of these blocks identified several groups that came from close contexts and very obviously had fragments of the same picture adhering to them. These groups were examined separately to see if they could be joined to a larger fragment of a picture and whether smaller fragments from related contexts could be added.

A single small fragment found in the *bema* area (Context AM91/A3-31) could be joined to block PP004, which had been found in the same context. Other fragments from this context are obviously related to block PP001, also found here, but they could not be joined, and their position in relation to it remains unclear. In addition to those blocks, block PP003 and the small fragments apparently belonged to the same picture, painted in layer 1, and it might be possible to identify it by comparing its details to other, intact frescoes.[61]

Two other groups could be identified, both found in the south aisle center bay. Blocks PP031, PP009, and PP011 must once have been stacked upon each other because they show the same color distribution and details. Blocks PP043 and PP026 also show similar details and colors and might have been part of a series of clipei, such as those that were observed on the south wall of the bay during excavation.[62] Both these groups belong to the frescoes of layer 1, although the fragment on block PP026 is partially covered by layer 2.

Many more blocks found in the south aisle center bay (Context AM96/A8-6) show small remnants of purplish-brown and red fresco in layer 1. It is likely that they belong to a single composition or similar repeated pictures, such

[60] A short report on the Amorium frescoes and mosaics was presented at the 28th Annual Byzantine Studies Conference, held at Ohio State University, 4–6 October 2002: J. Witte-Orr, "The Mural Decoration of the Lower City Church at Amorium," *BSCAbstr* (2002): 59–60. A more detailed study has also appeared in Lightfoot, *Amorium II,* 139–58.

[61] The older fresco layer will be called "layer 1" in the following discussion, and the newer layer covering it will be labeled "layer 2."

[62] Thanks go to Eric Ivison for relating his observations, made during excavation in 1996, on the fresco fragments on this wall.

as standing saints, but due to their minimal size and position in the center of the block surfaces it is impossible to identify them. Only a few related small fragments were found in the same context. These show similar colors in layer 1, which is in many cases covered by layer 2, a fresco with very different details and colors. This, and the difference between the two layers on block PP026, suggests that the images of layer 2 did not take up exactly the same position as the previous images and that they might even have had a different content. It was not possible to join the surviving small fragments to any of these blocks.

Mosaics

More than 80 percent of all tesserae found in the church came from the *bema* and apse; half of the remaining tesserae were found in the center of the *naos* and a quarter in the western part of the *naos*. Small quantities of tesserae were found in all the bays of the south and north aisles. This pattern suggests that the apse, the vault above the *bema*, and the (putative) dome (of the middle Byzantine church) had been decorated with mosaics. These tesserae had been counted in 1994 and 1997.[63] The count was repeated this year in a more detailed fashion by sorting the glass colors by their hues and the nonglass tesserae by material (Fig. 13).[64] About 30 percent of the tesserae found are red, followed by 17 percent gold, and 11 percent dark turquoise. The remaining colors of opaque glass tesserae comprise light and medium yellow-green, light and dark emerald green, light turquoise, black, dark blue, several shades of gray, light olive, brown, and a few brownish-yellow tesserae that might actually have been used as brown. The percentages suggests that gold was likely to have been used for backgrounds; red may have been used for framework, ornaments, and details, and turquoise and green shades perhaps for ornaments, details, and the ground that figures were standing on.[65] There are no white or true yellow glass tesserae.[66] Besides transparent amber-colored tesserae, there are also a smaller number of tesserae in transparent bottle green, and a larger number of tesserae made from transparent glass with a pinkish, honey-colored tint. These are usually tiny and must have been used in fine details.

As well as gold tesserae, there are also a large number of silver tesserae. The proportion of silver tesserae to freshly cut gold tesserae is about 1:3 to 1:2. Since many have a very similar and very regular size, some might have been used in the background; the mosaic fragments show, however, that lines of gold and silver tesserae were used within figures or ornaments (Fig. 14).[67] A very small number of pink stone, white and gray limestone, and marble tesserae have survived. Since small stone tesserae were mainly used in faces and other body parts of figures, it is very likely that the Amorium mosaics included figures.[68] Since we have only a fraction of all the tesserae used in the church, the small proportion of stone tesserae should be regarded as a random and accidental result. Many more tesserae were lost when the dome, apse, and vault masonry, and the mosaics adhering to them, disappeared. Tesserae cut from a medium gray to almost black chert with white, sometimes cream or pinkish layers make up the largest percentage of stone tesserae. Traces of setting-bed mortar on them and a few mosaic fragments allow identification of their mosaic surface side (Fig. 14). It seems that in some

[63] *AnatSt* 45 (1995): 130–31 and fig. 7; *DOP* 53 (1999): 343–44 and fig. 5.

[64] The red tesserae are arranged in groups of light red, sealing wax red, and brownish-red. Many tesserae show bands of different red hues as a result of uneven heating, and it is difficult to determine their mosaic face, so sealing wax red and brownish-red were counted as one. Many more red tesserae than shown here came from this context. Thanks go to Georgios Brokalakis for helping count the immense number of red tesserae.

[65] Shades of green, turquoise, and blue were used extensively in the ground zone of the narthex panel of Hagia Sophia: E. J. W. Hawkins, "Further Observations on the Narthex Mosaic in St. Sophia at Istanbul," *DOP* 22 (1968): 155.

[66] The lightest color of the opaque glass tesserae is a very light gray with a bluish tint. These tesserae consist of a very porous glass with many air bubbles; it is very difficult to describe the color precisely.

[67] The proportion of gold to silver tesserae in the Hagia Sophia mosaics varies. Only the middle Byzantine mosaics have backgrounds made of gold and silver tesserae: N. Teteriatnikov, *Mosaics of Hagia Sophia, Istanbul: The Fossati Restoration and the Work of the Byzantine Institute* (Washington, D.C., 1998), 58ff. For a different observation, see C. Mango and E. J. W. Hawkins, "The Apse Mosaic of St. Sophia at Istanbul. Report on Work Carried Out in 1964," *DOP* 19 (1965): 141. In the apse mosaic of Hagia Sophia and in the dome of St. Sophia in Thessalonike, Christ's garments are gold with dark red shadows: J. Lowden, *Early Christian and Byzantine Art* (London, 1997), figs. 99 and 107.

[68] D. Mouriki, *The Mosaics of Nea Moni on Chios* (Athens, 1985), 97 and 100.

cases the white side was used to take the place of a white tessera, but often the gray side was used in the picture surface.[69]

The biggest surprise was found in the gold tesserae: almost half of them were damaged by fire; their surface is in many cases blackened and the cover glass melted to a rounded shape (Fig. 15). These tesserae were found scattered across the entire nave and always in connection with undamaged freshly cut gold tesserae and other undamaged glass tesserae. The traces of setting-bed mortar revealed that at least some were set upside down, so that their undersides, with a red uneven surface from pouring the base glass on a red substance, were visible in the mosaic. Thus the tesserae were molten before they were set, so they had been recycled and were not necessarily intended for gold surfaces in their new setting.[70] None of the silver tesserae were damaged by fire. Among the other glass tesserae there are less than a handful that were molten, and in one area molten glass had dripped onto mortar.[71] There is no indication that a major fire caused the mosaics to melt across the entire church, and we should assume, therefore, that the molten gold tesserae were recycled from an older building.[72]

[69] The use of gray stone tesserae is known from other sites. Several kinds of gray stone are recorded in the mosaics at Dereağzı; J. Morganstern, *The Byzantine Church at Dereağzı and Its Decoration* (Tübingen, 1983), 104. A "decayed granite of a gray-brown or khaki-brown color" was observed in the garments of the archangel and in the Virgin's throne in Hagia Sophia: Mango and Hawkins, "The Apse Mosaic," 141.

[70] See Mouriki, *Nea Moni,* 99 n. 3; Hawkins, "Further Observations," 54; L. James, *Light and Colour in Byzantine Art* (Oxford, 1996), 25.

[71] *DOP* 53 (1999): 344 n. 32.

[72] This evidence for recycling tesserae sheds new light on the reports that Basil I used tesserae and marble from other monuments for the decoration of his Nea Ekklesia: C. Mango, *The Art of the Byzantine Empire 312–1453* (repr. Toronto, 1986), 181 n. 1. For an example of fire damage to mosaics, see O. Demus, W. Dorigo, A. Niero, G. Perocco, and E. Vio, *Venise Saint-Marc* (Paris, 1991), 82.